

University of Montana

ScholarWorks at University of Montana

University of Montana Conference on Undergraduate Research (UMCUR)

Using *C. elegans* as a Model Organism to Study Genes linked to Alzheimer's

Ketch Jacobson

kj119896@umconnect.umt.edu

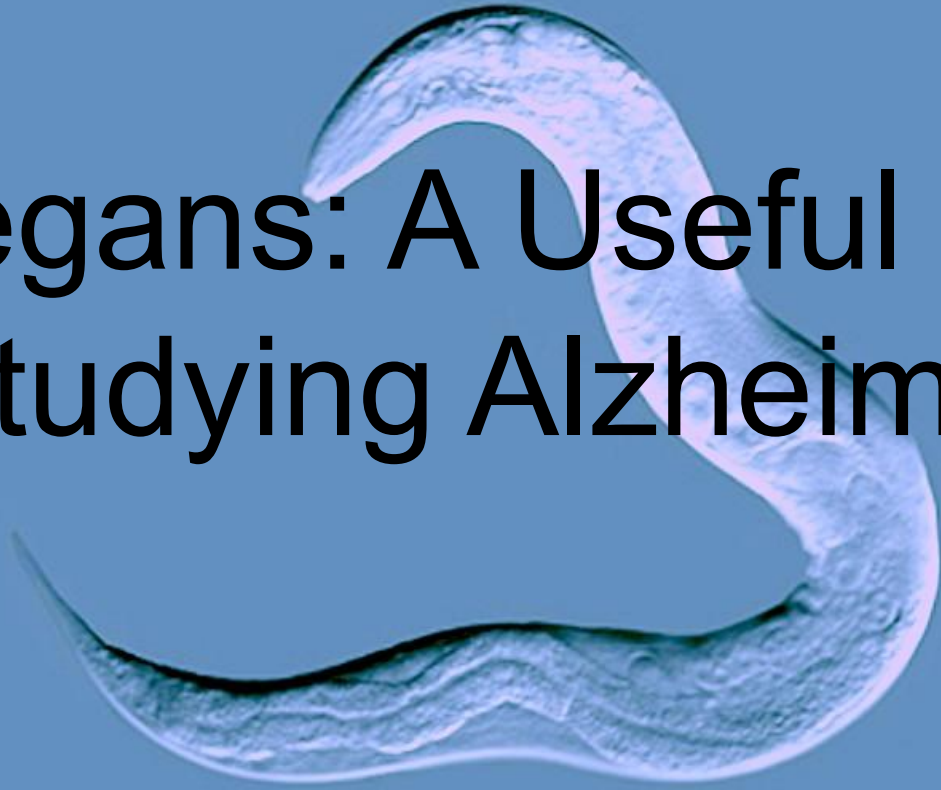
Follow this and additional works at: <https://scholarworks.umt.edu/umcur>

Let us know how access to this document benefits you.

Jacobson, Ketch, "Using *C. elegans* as a Model Organism to Study Genes linked to Alzheimer's" (2021). *University of Montana Conference on Undergraduate Research (UMCUR)*. 2. https://scholarworks.umt.edu/umcur/2021/lifesciences_oral/2

This Presentation is brought to you for free and open access by ScholarWorks at University of Montana. It has been accepted for inclusion in University of Montana Conference on Undergraduate Research (UMCUR) by an authorized administrator of ScholarWorks at University of Montana. For more information, please contact scholarworks@mso.umt.edu.

C. Elegans: A Useful Model for Studying Alzheimer's?



Background

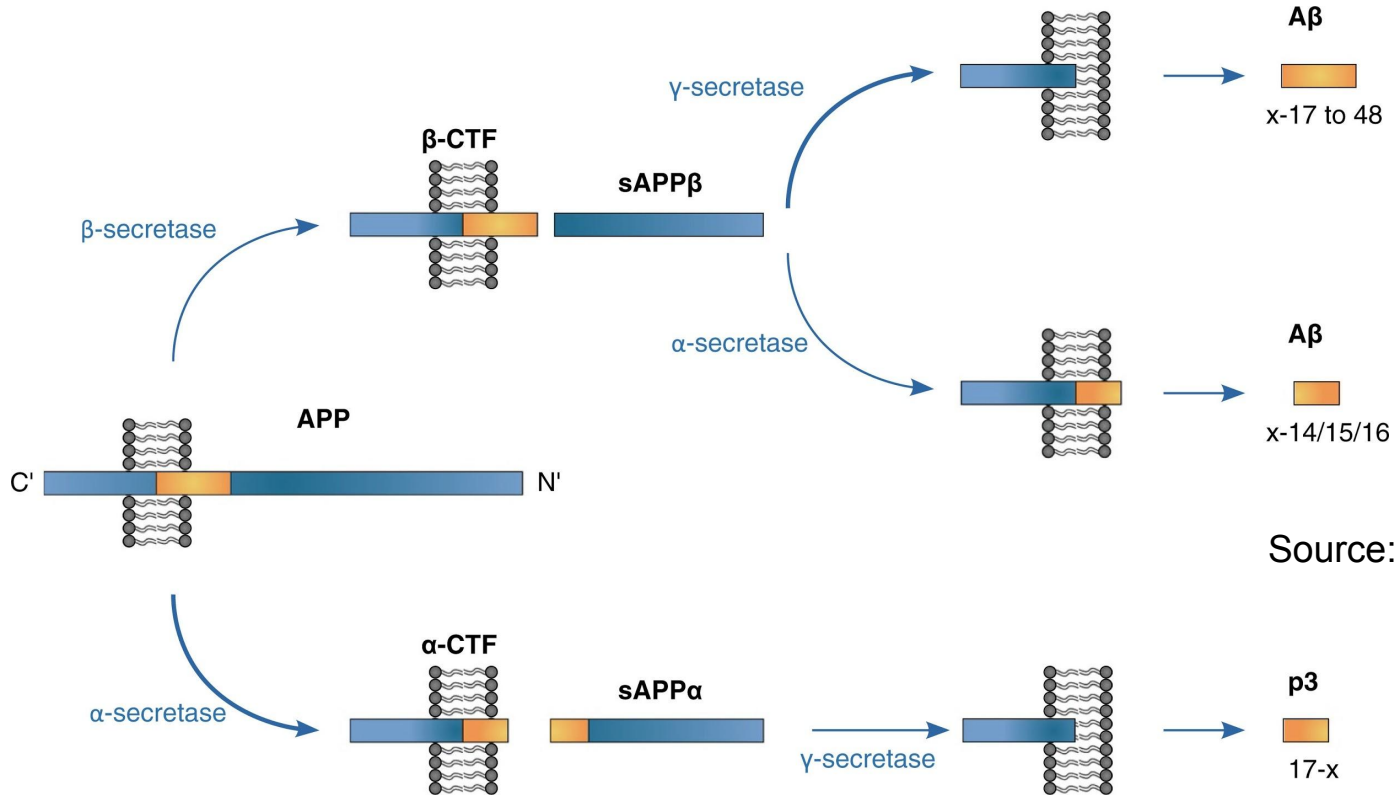
Healthy Brain



Brain with Advanced AD



Molecular Biology of Disease



Source: Biomed Central

Genes Involved in AD

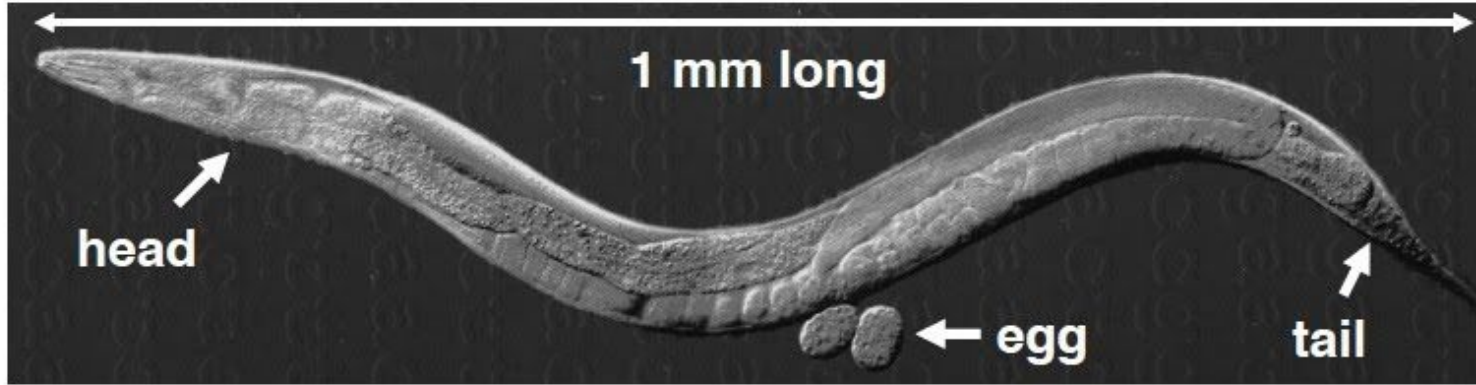
The following genes are known to have an effect on Alzheimers:

ADAM10, CELF1, FERMT2, HLA-DRB5, INPP5D, MEF2C, NME8, **APP**, PTK2B, SORL1, ZCWPW1, SLC24A4, CLU, PICALM, CR1, BIN1, MS4A, **ABCA7**, **PLAU**, EPHA1, **PSEN1**, **PSEN2**, and CD2AP

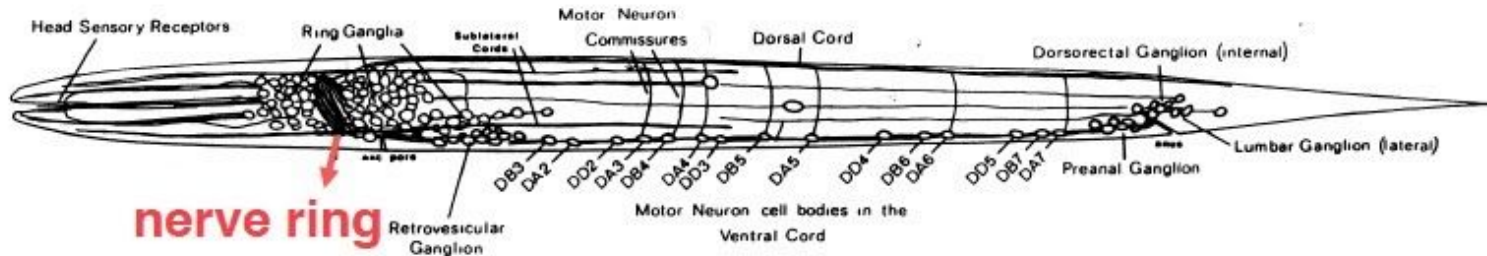
Worm Orthologs

(according to Ortholist)

Why Worms?



***C. elegans* hermaphrodite adult**



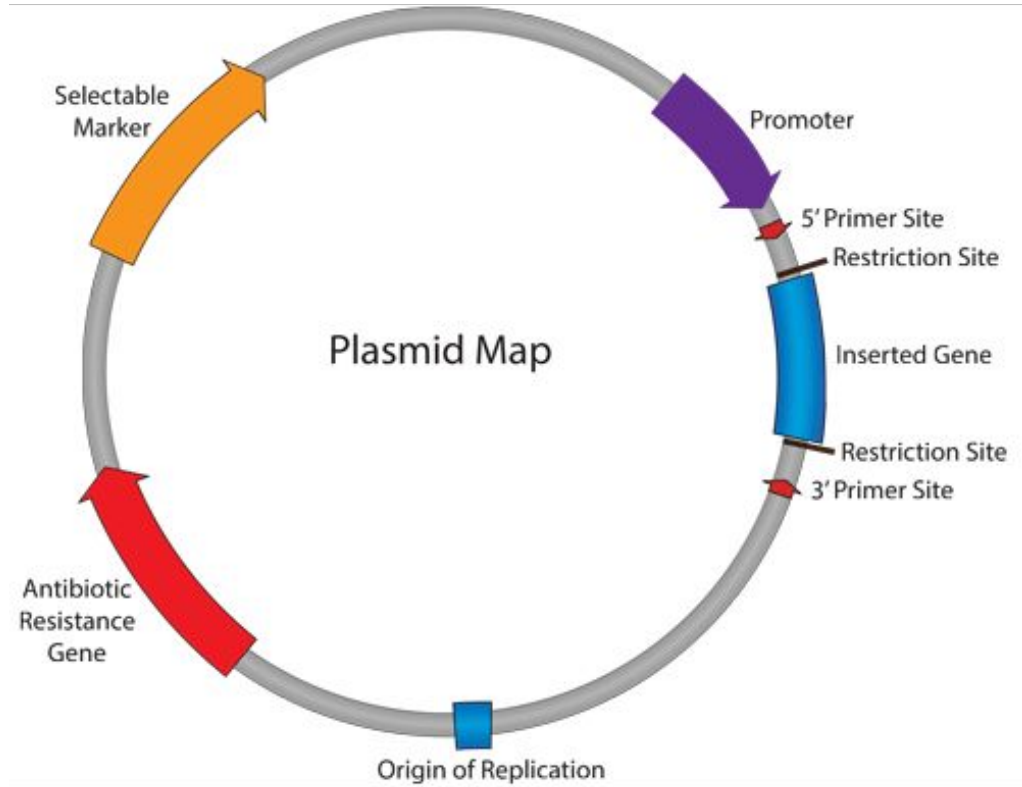
Methods

Developing Plasmids

RNAi

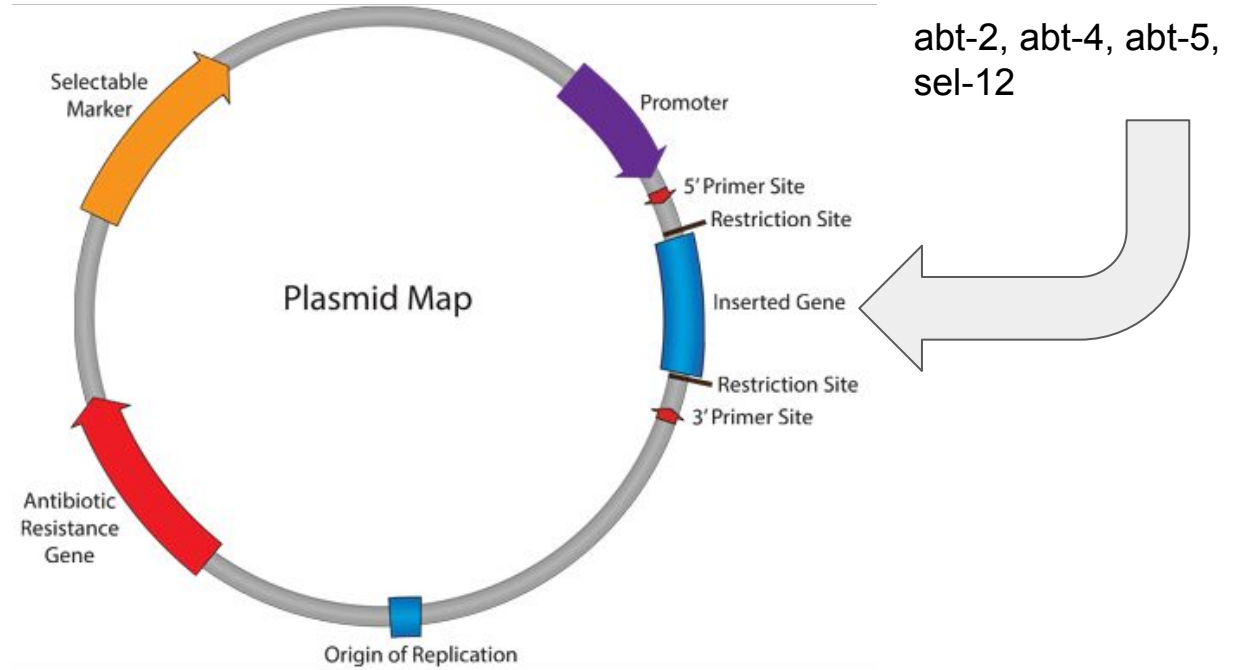
Observing Phenotypes

Drawing Conclusions



Genes to be studied

RNAi Plasmid



Grow the Worms, Observe Phenotypes



Preliminary Results (Still Investigating)

Worms in Solution:

Control: 15%

Abt-2: 8%

Abt-4: 54%

Abt-5: 28%

Sel-12: 20%

Results

Worms in Solution:

Control: 15%

Abt-2: 8%

Abt-4: 54%

Abt-5: 28%

Sel-12: 20%

Roughly 12 worms per test.

This Week:

Tuesday: Worms Grown, stress in M9 solution.

Thursday: Count worms, run statistical analysis to see if significant difference.



Conclusions/Significance

Abt-4 and abt-5 expressed in neurons?

A useful model for studying alzheimer's disease

Future directions